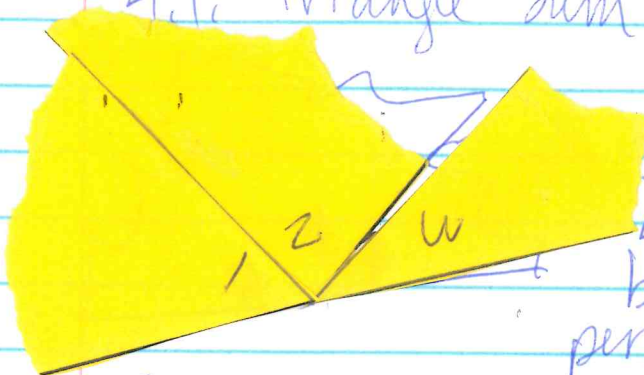
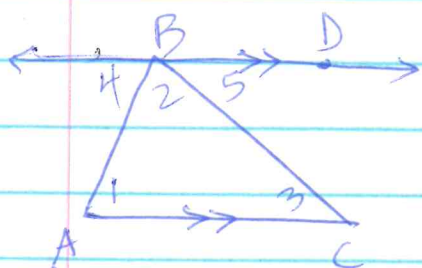


# 4.1. Triangle Sum Investigation



It appears that  $\angle 1 + \angle 2 + \angle 3 = 180^\circ$  because they fit perfectly on a line.

(inductive reasoning) - observed from patterns



Deductive Explanation (Proof)

Given:  $\triangle ABC$  with  $\overleftrightarrow{BD} \parallel \overleftrightarrow{AC}$

Show:  $m\angle 1 + m\angle 2 + m\angle 3 = 180^\circ$

What  
 $\triangle ABC$  with  $\overleftrightarrow{BD} \parallel \overleftrightarrow{AC}$

Why  
 Given

$$\angle 1 \cong \angle 4 \quad \angle 3 \cong \angle 5$$

$$m\angle 4 + m\angle 2 + m\angle 5 = 180^\circ$$

$$m\angle 1 + m\angle 2 + m\angle 3 = 180^\circ$$

Alt angles  $\cong$  when lines are  $\parallel$ .

They lie on a line (LP)

Substitution

$\therefore$  The sum of the angles of any triangle is  $180^\circ$ .

C-17 (p 205)